

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 09 August 2000 (09.08.00)	
International application No. PCT/US99/30337	Applicant's or agent's file reference BB1324 PCT
International filing date (day/month/year) 20 December 1999 (20.12.99)	Priority date (day/month/year) 21 December 1998 (21.12.98)
Applicant FAMODU, Omolayo, O. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
10 July 2000 (10.07.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Pascal Piriou Telephone No.: (41-22) 338.83.38
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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

by fax and post

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

To:

SCHAEFFER, Andrew L.
E.I. DU PONT DE NEMOURS AND COMPANY
Legal Patent Records Center
1007 Market Street
Wilmington, DE 19898
ETATS-UNIS D'AMERIQUE

Fax NO: (302) 773-0164

Date of mailing
(day/month/year) 26.03.2001

Applicant's or agent's file reference
BB1324 1

IMPORTANT NOTIFICATION

International application No.
PCT/US99/30337

International filing date (day/month/year)
20/12/1999

Priority date (day/month/year)
21/12/1998

Applicant

E.I DU PONT DE NEMOURS AND COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

KEY NOTED

Name and mailing address of the IPEA/

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D-80298 Munich
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Fax: +49 89 2399 - 4465

Authorized officer

Büchler, S



Tel. +49 89 2399-8090



21 JE 2001

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BB1324 1		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/30337	International filing date (day/month/year) 20/12/1999	Priority date (day/month/year) 21/12/1998	
International Patent Classification (IPC) or national classification and IPC C12N15/53			
Applicant E.I DU PONT DE NEMOURS AND COMPANY et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 807 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input checked="" type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 10/07/2000		Date of completion of this report 26.03.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Strobel, A Telephone No. +49 89 2399 7362 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/30337

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

1-24 as originally filed

Claims, No.:

1-24 as originally filed

Sequence listing part of the description, pages:

1-7, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☒ furnished subsequently to this Authority in computer readable form.
- ☒ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☒ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US99/30337**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

II. Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:

☐ copy of the earlier application whose priority has been claimed.

☐ translation of the earlier application whose priority has been claimed.

2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid.

Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:
see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-24
Industrial applicability (IA)	Yes:	Claims	1-24
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re It m II

Pri rity

Reference is made to the following document:

D1: SHOEMAKER, R., ET AL. : "public soybean EST project" EMBL SEQUENCE DATA LIBRARY, 15 December 1999 (1999-12-15), XP002139424 Heidelberg, Germany, Accession number AW234443

The present application claims priority of US Provisional Application No. 60/113,190. However, this priority document does not disclose isolated polynucleotides comprising a sequence that encodes a polypeptide of at least 494 amino acids showing at least 80% sequence identity with SEQ ID NOs:2 or 4.

Therefore, the priority for claims 1-10, 16, 17, and 19 is not valid. As a consequence, document D1 published after the priority date becomes relevant and belongs to the prior art as far as said claims are concerned.

Re It m V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. This application concerns the cloning of an EST from soybean that might encode an isoflavone-2-hydroxylase, an enzyme involved in synthesis of plant isoflavonoids. Applicants sequence cDNA libraries obtained from various tissues of soybean. They perform BLAST similarity searches on the so obtained polynucleotide sequences (SEQ ID NOs.1 and 3) and identify them as 60 and 61% identical to isoflavone-2-hydroxylases of Glycyrrhiza echulenta and Cicer arietinum.
Applicants claim isolated polynucleotides encoding a polypeptide of at least 494 amino acids or at least 141 amino acids and showing at least 80% identity when compared to a polypeptide having SEQ ID NO: 1 or 2, chimeric genes comprising said polynucleotides, host cells and viruses comprising said polynucleotide, the polypeptide itself, compositions comprising the claimed polynucleotide or polypeptide of at least 494 or 141 amino acids, methods of selecting an isolated polynucleotide that affects the level of expression of a flavonoid biosynthetic enzyme, and finally methods of obtaining a nucleic acid fragment encoding a

flavonoid biosynthetic enzyme .

2. Inventive step of claims 1-24

The isolated polynucleotides/polypeptides claimed in said claims do not have any technical features. This is also evident from method claims 11 and 13 which relate to the selection of an isolated polynucleotide of claim 1 that affects the level of expression of a flavonoid biosynthetic enzyme. Said method claims therefore imply that not every isolated polynucleotide of claim 1 affects the expression level of a flavonoid biosynthetic enzyme in a plant cell, in other words that not every isolated polynucleotide of claim 1 has a technical effect. EST sequences to which a putative function is assigned by computational sequence comparisons cannot constitute inventive subject-matter. Applicants do not disclose that said polynucleotide/polypeptide sequences may affect the synthesis of a flavonoid biosynthetic enzyme or may probe/amplify such an enzyme, or finally may display the enzymatic activity of a flavonoid biosynthetic enzyme.

Especially in the light of D1, the underlying technical problem is to provide another EST sequence from soybean, which is a trivial problem.

Thus, claims 1-24 are obvious and do not fulfil the requirements of Article 33(3) PCT.

Re It m VIII

Certain observations on the international application

1. Method claims 11-15, and 20-22 refer to methods for the selection of an isolated polynucleotide that affects the expression of a flavonoid biosynthetic enzyme in a plant cell or a method of obtaining a nucleic acid fragment encoding a flavonoid biosynthetic enzyme. However, the entire application does not provide any experimental data showing that the claimed methods might affect the expression of a flavonoid biosynthetic enzyme or that said methods may lead to the isolation of a nucleic acid fragment encoding a flavonoid biosynthetic enzyme.
Thus, said claims are not supported by the description (Article 6 PCT).
2. Method claims 11, 14, 15, 18, 21, and 22 relate to isolated polynucleotides comprising a nucleotide sequence of at least one of 30 contiguous nucleotides

EXAMINATION REPORT - SEPARATE SHEET

derived from an isolated polynucleotide of claim 1 or from polynucleotides with SEQ ID NO:1 or 3. This means that the polynucleotides of said method claims can be any polynucleotide, since they must comprise only one nucleotide present in a stretch of 30 nucleotides. Since the polynucleotide of the present method claims is not at all defined by technical features whatsoever, said claims are unclear (Article 6 PCT).



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/53, 15/82, 9/02, C12Q 1/68, 1/02	A2	(11) International Publication Number: WO 00/37652 (43) International Publication Date: 29 June 2000 (29.06.00)
(21) International Application Number: PCT/US99/30337 (22) International Filing Date: 20 December 1999 (20.12.99) (30) Priority Data: 60/113,190 21 December 1998 (21.12.98) US (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): FAMODU, Omolayo, O. [US/US]; 216 Barrett Run Place, Newark, DE 19702 (US). MCGONIGLE, Brian [US/US]; 1707 North Union Street, Wilmington, DE 19806 (US). ODELL, Joan, T. [US/US]; P.O. Box 826, Unionville, PA 19375 (US). FADER, Gary, M. [US/US]; 1000 Woods Lane, Landenberg, PA 19350 (US). FALCO, Saverio, Carl [US/US]; 1902 Miller Road, Arden, DE 19810 (US). (74) Agent: FEULNER, Gregory, J.; E.I. du Pont de Nemours and Company, Legal Patent Record Center, 1007 Market Street, Wilmington, DE 19898 (US).		(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CR, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: FLAVONOID BIOSYNTHETIC ENZYMES (57) Abstract <p>This invention relates to an isolated nucleic acid fragment encoding a flavonoid biosynthetic enzyme. The invention also relates to the construction of a chimeric gene encoding all or a portion of the flavonoid biosynthetic enzyme, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the flavonoid biosynthetic enzyme in a transformed host cell.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

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SEQUENCE LISTING

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 Trp Phe Gly Ser Arg Leu Val Val Val Val Ser Ser Pro Thr Ala Tyr
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 His Ala Leu Ser Gln Lys Tyr Gly Pro Ile Phe Ser Leu Trp Phe Gly
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			100					105					110		
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/53, 15/82, 9/02, C12Q 1/68, 1/02	A3	(11) International Publication Number: WO 00/37652 (43) International Publication Date: 29 June 2000 (29.06.00)
(21) International Application Number: PCT/US99/30337 (22) International Filing Date: 20 December 1999 (20.12.99) (30) Priority Data: 60/113,190 21 December 1998 (21.12.98) US (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): FAMODU, Omolayo, O. [US/US]; 216 Barrett Run Place, Newark, DE 19702 (US). MCGONIGLE, Brian [US/US]; 1707 North Union Street, Wilmington, DE 19806 (US). ODELL, Joan, T. [US/US]; P.O. Box 826, Unionville, PA 19375 (US). FADER, Gary, M. [US/US]; 1000 Woods Lane, Landenberg, PA 19350 (US). FALCO, Saverio, Carl [US/US]; 1902 Miller Road, Arden, DE 19810 (US). (74) Agent: FEULNER, Gregory, J.; E.I. du Pont de Nemours and Company, Legal Patent Record Center, 1007 Market Street, Wilmington, DE 19898 (US).		(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CR, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 16 November 2000 (16.11.00)
(54) Title: FLAVONOID BIOSYNTHETIC ENZYMES (57) Abstract This invention relates to an isolated nucleic acid fragment encoding a flavonoid biosynthetic enzyme. The invention also relates to the construction of a chimeric gene encoding all or a portion of the flavonoid biosynthetic enzyme, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the flavonoid biosynthetic enzyme in a transformed host cell.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference BB1324 PCT1	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 99/ 30337	International filing date (day/month/year) 20/12/1999	(Earliest) Priority Date (day/month/year) 21/12/1998
Applicant E.I DU PONT DE NEMOURS AND COMPANY et al		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☒ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☒ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

P 99/30337

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/53 C12N15/82 C12N9/02 C12Q1/68 C12Q1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, STRAND, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ✓	AKASHI TOMOYOSHI ET AL: "CYHP81E1, a cytochrome P450 cDNA of licorice (Glycyrrhiza echinata L.), encodes isoflavone 2'-hydroxylase." BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS OCT. 9, 1998, vol. 251, no. 1, 9 October 1998 (1998-10-09), pages 67-70, XP000914524 ISSN: 0006-291X cited in the application the whole document --- -/--	

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

4 July 2000

Date of mailing of the international search report

17/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Holtorf, S

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/30337

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AKASHI, T., ET AL. : "cloning of cytochrome P450 cDNAs from cultured Glycyrrhiza echinata L. cells and their transcriptional activation by elicitor-treatment" EMBL SEQUENCE DATA LIBRARY, 23 September 1997 (1997-09-23), XP002139419 heidelberg, germany accession no. AB001379 ---	
A	DANIEL, S., ET AL. : "elicitor-induced metabolic changes in cell cultures of chickpea (Cicer arietinum L.) cultivars resistant and susceptible to Ascochyta blight. I. investigations of enzyme activities involved in isoflavone and pterocarpan phytoalexin biosynthesis" PLANTA, vol. 182, no. 2, 1990, pages 270-278, XP000914222 the whole document ---	
A	OVERKAMP, S. AND BARZ, W.: "cloning of two Cicer arietinum L. cDNAs encoding cytochrome P450 highly homologous to isoflavone 2' hydroxylase from licorice" EMBL SEQUENCE DATA LIBRARY, 6 November 1998 (1998-11-06), XP002139420 heidelberg, germany accession no. AJ012581 ---	
A	HINDERER W ET AL: "MICROSOMAL ISOFLAVONE 2' AND 3'-HYDROXYLASES FROM CHICKPEA CICER-ARIETINUM L. CELL SUSPENSIONS INDUCED FOR PTEROCARPAN PHYTOALEXIN FORMATION" FEBS (FEDERATION OF EUROPEAN BIOCHEMICAL SOCIETIES) LETTERS 1987, vol. 214, no. 1, 1987, pages 101-106, XP002139422 ISSN: 0014-5793 the whole document ---	
A	KESSMANN H ET AL: "STRESS RESPONSES IN ALFALFA MEDICAGO-SATIVA L. V. CONSTITUTIVE AND ELICITOR-INDUCED ACCUMULATION OF ISOFLAVONOID CONJUGATES IN CELL SUSPENSION CULTURES" PLANT PHYSIOLOGY (BETHESDA) 1990, vol. 94, no. 1, 1990, pages 227-232, XP002139423 ISSN: 0032-0889 the whole document ---	
	-/--	

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/30337

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>CLEMENS STEPHAN ET AL: "Characterization of cytochrome P450-dependent isoflavone hydroxylases from chickpea." PHYTOCHEMISTRY (OXFORD) 1993, vol. 32, no. 3, 1993, pages 653-657, XP000920560 ISSN: 0031-9422</p>	
P,X	<p>SHOEMAKER, R., ET AL. : "public soybean EST project" EMBL SEQUENCE DATA LIBRARY, 15 December 1999 (1999-12-15), XP002139424 heidelberg, germany accession no. AW234443</p>	1-4

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/30337

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/53 C12N15/82 C12N9/02 C12Q1/68 C12Q1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, STRAND, PAJ, WPI Data

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Patent family members are listed in annex.

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- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

4 July 2000

Date of mailing of the international search report

17/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Holtorf, S

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	<p>DANIEL, S., ET AL. : "elicitor-induced metabolic changes in cel cultures of chickpea (Cicer arietinum L.) cultivars resistant and susceptible to Ascochyta rabiei. I. investigations of enzyme activities involved in isoflavone and pterocarpin phytoalexin biosynthesis" PLANTA, vol. 182, no. 2, 1990, pages 270-278, XP000914222 the whole document</p>	
A	<p>OVERKAMP, S. AND BARZ, W.: "cloning of two Cicer arietinum L. cDNAs encoding cytochrome P450 highly homologous to isoflavone 2' hydroxylase from licorice" EMBL SEQUENCE DATA LIBRARY, 6 November 1998 (1998-11-06), XP002139420 heidelberg, germany accession no. AJ012581</p>	
A	<p>HINDERER W ET AL: "MICROSOMAL ISOFLAVONE 2' AND 3'-HYDROXYLASES FROM CHICKPEA CICER-ARIETINUM L. CELL SUSPENSIONS INDUCED FOR PTEROCARPAN PHYTOALEXIN FORMATION" FEBS (FEDERATION OF EUROPEAN BIOCHEMICAL SOCIETIES) LETTERS 1987, vol. 214, no. 1, 1987, pages 101-106, XP002139422 ISSN: 0014-5793 the whole document</p>	
A	<p>KESSMANN H ET AL: "STRESS RESPONSES IN ALFALFA MEDICAGO-SATIVA L. V. CONSTITUTIVE AND ELICITOR-INDUCED ACCUMULATION OF ISOFLAVONOID CONJUGATES IN CELL SUSPENSION CULTURES" PLANT PHYSIOLOGY (BETHESDA) 1990, vol. 94, no. 1, 1990, pages 227-232, XP002139423 ISSN: 0032-0889 the whole document</p>	

-/--

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CLEMENS STEPHAN ET AL: "Characterization of cytochrome P450-dependent isoflavone hydroxylases from chickpea." PHYTOCHEMISTRY (OXFORD) 1993, vol. 32, no. 3, 1993, pages 653-657, XP000920560 ISSN: 0031-9422	
P,X	SHOEMAKER, R., ET AL. : "public soybean EST project" EMBL SEQUENCE DATA LIBRARY, 15 December 1999 (1999-12-15), XP002139424 heidelberg, germany accession no. AW234443	1-4

cc: U.S. file ✓

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

RECEIVED

(PCT Rule 44.1) JUL 24 2000

PATENT RECORDS
CENTER

To:

E.I. DU PONT DE NEMOURS AND COMPANY
Legal/Patent Records Center
Attn. FEULNER, Gregory J. *WRM*
1007 Market Street
Wilmington, Delaware 19898
UNITED STATES OF AMERICA

Date of mailing
(day/month/year)

17/07/2000

Applicant's or agent's file reference

BB1324 PCT *MMc*

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US 99/ 30337

International filing date
(day/month/year)

20/12/1999

Applicant

E.I DU PONT DE NEMOURS AND COMPANY et al

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
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TRB NOTED

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.